IN THE CLAIMS:

This listing of the claims replaces all previous listings, and versions, of the claims.

1. (Previously Presented) A lithographic projection apparatus, comprising:

a radiation system configured to provide a beam of radiation;

a support configured to support a patterning device, the patterning device configured to pattern the beam of radiation according to a desired pattern;

a substrate table configured to hold a substrate;

a projection system configured to project the patterned beam onto a target portion of the substrate; and

an interferometric displacement measuring system configured to measure displacements of a moveable component of the apparatus and comprising a model, the model relating sensor measurements to displacements of the moveable component, wherein the model incorporates at least one correction term that is a function of a variable representing beamshear of a measurement beam of the interferometric displacement measuring system, and the interferometric displacement measuring system is configured to determine displacements as a function of moveable component rotation and moveable component position, and to determine interferometer model parameters, including coefficients for terms dependent on a variable representing beamshear of a measurement beam, using a least square fit.

2. (Original) An apparatus according to claim 1, wherein the measurement beam traverses an optical path between a fixed part of the interferometric displacement measuring system and a measuring mirror fixed to the moveable component, and the variable representing beamshear is proportional to at least one of the length of the optical path, the number of passes of the optical path made by the measurement beam, and the angle between the measurement beam and the normal to the measuring mirror.

3. (Previously Presented) An apparatus according to claim 1, wherein the model includes correction terms that are functions of variables representing beamshear in at least two orthogonal directions.

4. (Original) An apparatus according to claim 1, wherein the correction term is a polynomial in the variable representing beamshear.

5. (Original) An apparatus according to claim 4, wherein the polynomial is at least second order.

6. (Original) An apparatus according to claim 1, wherein the interferometric displacement measuring system is configured to measure displacements in at least two linear degrees of freedom and the model includes respective correction terms for each of the linear degrees of freedom.

7. (Previously Presented) An apparatus according to claim 1, wherein the moveable component is the support or the substrate table.

8. (Previously Presented) A device manufacturing method using a lithographic projection apparatus, the method comprising:

providing a substrate that is at least partially covered by a layer of radiation-sensitive material;

providing a beam of radiation using a radiation system;

using a patterning device to endow the projection beam with a pattern in its cross-section;

projecting the patterned beam of radiation onto a target portion of the layer of radiation-sensitive material;

measuring displacements of a moveable component of the lithographic projection apparatus using an interferometric displacement measuring system comprising a model, the model relating sensor measurements to displacements of the moveable component, wherein the model incorporates at least one correction term that is a function of a variable representing beamshear of a measurement beam of the interferometric displacement measuring system;

determining displacements as a function of moveable component rotation and moveable component position; and

determining interferometer model parameters, including coefficients for terms dependent on a variable representing beamshear of a measurement beam, using a least square fit.

9. (Previously Presented) A computer program embodied on a computer readable medium, comprising:

a program code that, when executed on a computer system, instructs the computer system to calculate displacements of a moveable object in a lithographic projection apparatus from sensor measurements of an interferometric displacement measuring system, calculate at least one correction term that is a function of a variable representing beamshear of a measurement beam of the interferometric displacement measuring system, determine displacements as a function of moveable object rotation and moveable object position, and determine interferometer model parameters, including coefficients for terms dependent on a variable representing beamshear of a measurement beam, using a least square fit.

10. (Previously Presented) A method of calibrating an interferometer for measuring displacements of a moveable object in a lithographic projection apparatus, the method comprising:

determining displacements as a function of moveable object rotation and moveable object position; and

determining interferometer model parameters, including coefficients for terms dependent on a variable representing beamshear of a measurement beam, using a least square fit.

11. (Previously Presented) A device manufacturing method according to claim 8, further comprising using the measured displacements to control movement of the moveable component.

12. (Previously Presented) A device manufacturing method according to claim 8, wherein the measurement beam traverses an optical path between a fixed part of the interferometric displacement measuring system and a measuring mirror fixed to the moveable component, and the variable representing beamshear is proportional to at least one of the

length of the optical path, the number of passes of the optical path made by the measurement beam, and the angle between the measurement beam and the normal to the measuring mirror.

13. (Currently Amended) A device manufacturing method according to claim 8~~9~~, wherein the model includes correction terms that are functions of variables representing beamshear in at least two orthogonal directions.

14. (Currently Amended) A device manufacturing method according to claim 8~~9~~, wherein the correction term is a polynomial in the variable representing beamshear.

15. (Previously Presented) A device manufacturing method according to claim 8, comprising measuring displacements in at least two linear degrees of freedom and the model includes respective correction terms for each of the linear degrees of freedom.

16. (Previously Presented) A computer program according to claim 9, wherein the measurement beam traverses an optical path between a fixed part of the interferometric displacement measuring system and a measuring mirror fixed to the moveable component, and the variable representing beamshear is proportional to at least one of the length of the optical path, the number of passes of the optical path made by the measurement beam, and the angle between the measurement beam and the normal to the measuring mirror.

17. (Previously Presented) A computer program according to claim 9, wherein the model includes correction terms that are functions of variables representing beamshear in at least two orthogonal directions.

18. (Previously Presented) A computer program according to claim 9, wherein the correction term is a polynomial in the variable representing beamshear.

19. (Previously Presented) A computer program according to claim 18, wherein the polynomial is at least second order.

20. (Previously Presented) A computer program according to claim 9, configured to measure displacements in at least two linear degrees of freedom and the model includes respective correction terms for each of the linear degrees of freedom.